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Aortic Valve Perforation Diagnosed With Use of 3-Dimensional Transesophageal Echocardiography

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Recommended Citation

Alluri, Nitya; Kumar, Simi; Marfatia, Ravi; Patil, Pravin; Ryan, Jason; and Avelar, Erick, "Aortic Valve Perforation Diagnosed With Use of 3-Dimensional Transesophageal Echocardiography" (2012). *Articles - Patient Care*. 32.
https://opencommons.uconn.edu/pcare_articles/32

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Aortic Valve Perforation

Diagnosed with Use of 3-Dimensional
Transesophageal Echocardiography

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A 62-year-old man presented with acute decompensated heart failure. His medical history included heart failure with preserved ejection fraction and infective endocarditis. Two-dimensional transthoracic echocardiography (TTE) showed eccentric aortic insufficiency, the mechanism and severity of which could not be accurately determined because multiple jets were present (Fig. 1A and 1B). Three-dimensional (3D) transesophageal echocardiography (TEE) of the aortic valve showed major perforations in the right coronary and noncoronary cusps and small perforations in the left coronary cusp; moderate thickening was consistent with prior endocarditis (Fig. 1C and 1D). Visual examination of the excised aortic valve confirmed these findings (Fig. 2).

Comment

Two-dimensional TTE and TEE are the conventional methods for the diagnosis and quantification of valvular heart disease. Because 3D echocardiography enables

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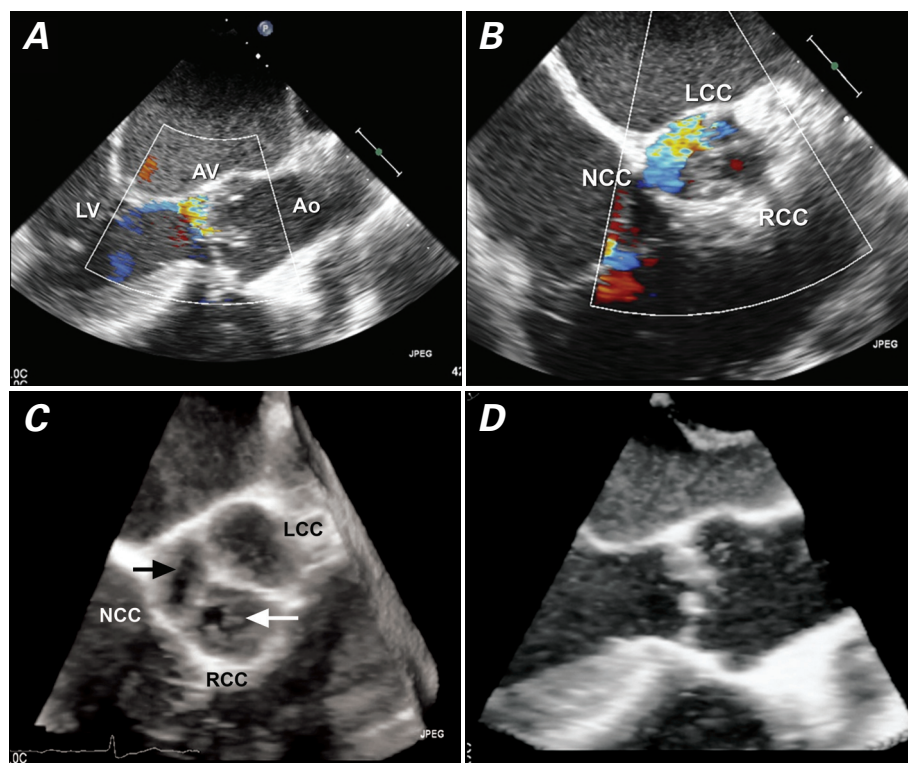


Fig. 1 Two-dimensional transthoracic echocardiograms with color-flow Doppler in **A**) long-axis and **B**) short-axis views show eccentric aortic valve regurgitation. **C**) Three-dimensional transesophageal echocardiogram (short-axis view) of the aortic valve in diastole reveals major perforations in the right coronary and noncoronary cusps (arrows) and multiple small perforations in the left coronary cusp. **D**) Three-dimensional long-axis view shows moderate thickening, consistent with previous endocarditis.

Ao = aorta; AV = aortic valve; LCC = left coronary cusp; LV = left ventricle; NCC = noncoronary cusp; RCC = right coronary cusp

Real-time motion image of Figure 1C is available at www.texasheart.org/journal.



Fig. 2 Photograph of a specimen from the excised aortic valve shows a major perforation (black arrow) and multiple small perforations (white arrows) in the valve cusps. The lack of commissural fusion indicates that prior infective endocarditis, not rheumatic valvular disease, was the cause.

the acquisition of a 3D data set, it is emerging as a better noninvasive tool for the evaluation of valvular and other structural heart disease.¹ The images that we acquired with use of 3D TEE definitively established the diagnosis of aortic valve perforation.

References

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